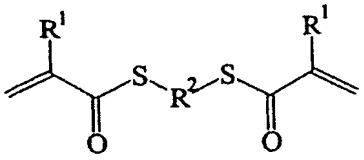
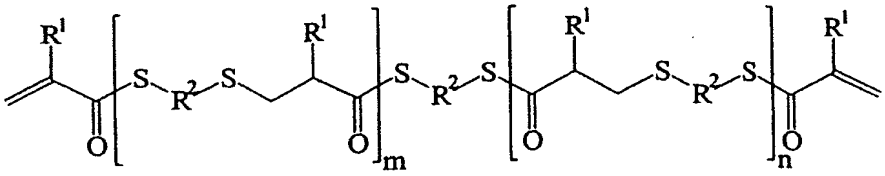
Patent Claims

1. Mixture for preparing transparent plastics, encompassing

a) a prepolymer prepared from compounds of the formula (I) and (II)



(I)



(II)

where each R^1, independently of the others, is hydrogen or a methyl radical,
each R^2, independently of the others, is a linear or branched, aliphatic or cycloaliphatic radical, or a substituted or unsubstituted aromatic or heteroaromatic radical, and each of m and n, independently of the others, is a whole number greater than or equal to 0, where $m + n > 0$, and from alkyl dithiols or from polythiols, preferably compounds of the formula (III),

$HS-R^3-SH$ (III)

where R^3, identical with or different from R^2, can be as defined for R^2, and

b) at least one monomer (A) capable of free-radical polymerization and having at least 2 methacrylate groups, and

c) aromatic vinyl compounds,

d) if appropriate, a monomer capable of free-radical polymerization and having at least two

terminal olefinic groups whose reactivity differs, and/or

e) if appropriate, at least one ethylenically unsaturated monomer (B).

2. Mixture according to Claim 1, characterized in that it comprises more than 10 mol%, based on the total amount of the compounds of the formula (I), (II) and (III), of compounds of the formula (II) where m + n = 2.

3. Mixture according to any of the preceding claims, characterized in that the radical R^2 of the formulae (I) and/or (II) is an aliphatic radical having from 1 to 10 carbon atoms.

4. Mixture according to any of the preceding claims, characterized in that the mixture comprises more than 5.8 mol%, based on the total amount of the compounds of the formula (I), (II) and (III), of compounds of the formula (II) where m + n = 3.

5. Mixture according to any of the preceding claims, characterized in that the mixture comprises from 0.1 to 50 mol%, based on the total amount of the compounds of the formula (I), (II) and (III), of compounds of the formula (I).

6. Mixture according to any of the preceding claims, characterized in that the mixture comprises from 1 to 40 mol%, based on the total amount of the compounds of the formula (I), (II) and (III), of compounds of the formula (II) where m + n = 1.

7. Mixture according to any of the preceding claims, characterized in that the mixture comprises compounds of the formula (II) where m + n > 3.

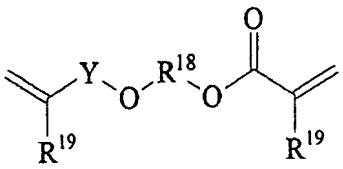
8. Mixture according to any of the preceding claims, characterized in that the total content of compounds of the formula (I), (II) and (III) is at least 5.0% by weight, based on the total weight of the mixture.

9. Mixture according to any of the preceding claims, characterized in that the mixture comprises at least one monomer (A) which is copolymerizable with the prepolymers prepared from the monomers of the formulae (I), (II) and (III).

10. Mixture according to Claim 9, characterized in that the mixture encompasses di(meth)acrylates.

11. Mixture according to the preceding claims, characterized in that the aromatic vinyl compounds present in the mixture preferably comprise styrene.

12. Mixtures according to Claim 1, characterized in that it comprises a monomer capable of free-radical polymerization and having at least two terminal olefinic groups whose reactivity differs, of the general formula



(XII),

where

the radical R^{19} is independently a hydrogen atom, a fluorine atom, and/or a methyl group,

the radical R^{18} is a connecting group which preferably encompasses from 1 to 1000, in

particular from 2 to 100, carbon atoms,

the radical Y is a bond or a connecting group having from 0 to 1000 carbon atoms, in particular from 1 to 1000 carbon atoms, and preferably from 1 to 100 carbon atoms.

13. Mixtures according to Claim 12, characterized in that they comprise allyl polyethylene glycol methacrylate.

14. Mixtures according to Claim 1, characterized in that they comprise at least one ethylenically unsaturated monomer (B), preferably methacrylate.

15. Mixtures according to Claim 14, characterized in that they comprise 2-hydroxyethyl methacrylate.

16. Process for preparing transparent plastics, characterized in that a mixture according to any of the preceding claims is polymerized.

17. Transparent plastic obtainable via a process according to Claim 16.

18. Plastic according to Claim 17, characterized in that the refractive index of the plastic to DIN 53491 is greater than 1.59.

19. Plastic according to Claim 17 or 18, characterized in that the Abbe number of the plastic to DIN 53491 is greater than 36.

20. Plastic according to any of Claims 17 to 19, characterized in that the average diameter of the ball which does not damage the test specimen in the falling ball test is $\geq$ 18.

21. Plastic according to any of Claims 17 to 20,

characterized in that the transmittance of the plastic to DIN 5036 is ≥ 89%.

22. Plastic according to any of Claims 17 to 21, characterized in that its glass transition temperature is greater than 80.0°C.

23. Use of the high-transparency plastic according to any of Claims 17 to 22 as an optical lens.

24. Optical, in particular ophthalmic, lens comprising a transparent plastic according to at least one of Claims 17 to 22.